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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HANDY, DWAYNE K

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 09/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/387,810

Applicant(s)

GOLDSTEIN ET AL.

Examiner

Dwayne K Handy

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 34-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 34-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 35, 36, 38, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liotta et al. (5,843,657) in view of Kachigan (5,084,005). Liotta teaches a method and apparatus for microdissection of tissue samples which utilizes a probe with a selectively activatable transfer surface for adhering to cells of interest. The probe is best shown in Figures 8A-8D and described in columns 12 and 13. In column 12, Liotta teaches a transfer surface (30) on the end of the end of a probe comprised of a backing layer (31) and an activatable adhesive layer (32). The activatable adhesive layer (32) is characterized by its ability to be stimulated by electromagnetic radiation so as to become locally adherent to the tissue. The reference then describes how the tissue is collected using the probe as shown in Figures 8A-8D. The transfer surface is positioned over a cellular material sample and brought into contact with the sample. The cellular sample to be removed is examined visually and then the probe surface corresponding to that area is activated by a beam of energy. The probe is lifted from the support – with cellular sample material attached – and then moved away from the remaining material in the sample. Liotta does not teach the use of a convex surface to place the sample on. Instead, Liotta uses a flat surface. Kachigan (5,084,005) teaches a swab for the collection of biological samples. The swab is shown in a variety of embodiments in the Figures and includes a swabbing tip with a convex surface. Kachigan, in several places in the disclosure, teaches that the convex tip to the probe is provided to minimize irritation to a patient when collecting tissue samples with the swab (column 4, lines 12-15; column 6, lines 4-7 and lines 31-34). It would have been

Art Unit: 1743

obvious to one of ordinary skill in the art to combine the convex tip of Kachigian with the extraction device of Liotta. The addition of the convex tip from Kachigian would allow for the direct removal of tissue from a patient with the extraction device of Liotta while providing minimal discomfort or irritation as taught by Kachigian. This would be advantageous in a tissue collecting device as it would allow for the direct use of the extraction tool in tissue removal and examination.

Claims 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liotta and Kachigian as applied to claims 35, 36, 38, 40 and 41 above, and further in view of Wach et al. (6,174,424). Liotta and Kachigian, as applied above, teach every element of claims 37 and 39 except for a faceted convex surface and a convex surface with the profile of a frustum. Wach teaches a variety of optical fiber probe shapes which may be used in various application in which a light conduit is required including biomedical applications (column 2, lines 24-37). In particular, the teachings of Wach include novel ways for the manipulation of light within and out of the fiber when used (column 14 line 57 – column 15, line 18). In columns 29 and 30, Wahl discloses an embodiment of a probe that is shown in Figure 27. The probe is both faceted and shaped in the profile of a frustum. After forming the probe with a tip, it is then flattened to a degree by grinding and polishing (column 30, lines 27-41). It would have been obvious to one of ordinary skill in the art to combine the frustum profile and faceted surface of Wach et al. with the combined teachings of Liotta and Kachigian. Liotta teaches the activation of its collection surface through the use of laser light (column 12,

Art Unit: 1743

lines 11-16). The use of a faceted surface created from multiple fiber optic elements as taught by Wach would allow for the enhanced activation of some of the surface but not other parts by using only some of the optical fibers bound within the fiber bundle as opposed to directing a single laser onto the selectively activated surface to activate it.

Response to Arguments

In light of applicant's arguments submitted in the appeal brief with reference to Liotta lacking a convex surface on the contact surface the Examiner has removed the previous rejections made under U.S.C. 102. The Examiner has now provided another rejection under U.S.C. 103 including the addition reference "Kachigian" which the Examiner believes provides the convex surface that Liotta does not teach.

The Examiner also agrees with applicant's assertion that the embodiment in Figure 2 does not teach a selectively activate coating, but instead teaches a probe end that is always sticky on the entire surface. Therefore, any mentioning of this embodiment has been removed from the new rejections.

As for the remaining arguments involving the "Third Liotta embodiment" (as labeled by applicant on page 13 of the Appeal Brief), the Examiner does not agree with applicant's assertions directed to the perceived shortcomings of the Liotta reference. Applicant first seems to be arguing that Liotta is different from the instant invention because it is not a probe. This is a spurious argument. Applicant has claimed an apparatus with a contact surface comprised of a rod with a convex surface attached with a selectively activated coating...." – not a probe. Second, applicant has argued

Art Unit: 1743

that the underline portion cited on pages 14 of the Appeal Brief details a device that is not the same as applicant's device. The Examiner disagrees. Aside from the convex surface (again, this is provided by Kachigian now), a "selectively activated coating placed over a contact surface having non-adhesive properties when placed to a sample while non-activated regions remain with non-adhesive properties" is *exactly* what is shown in Figures 8A-8D and described in detail in column 12. From the reference:

(52) FIGS. 8a-8d are schematic illustrations of the sequential steps of an adhesive transfer method according to one embodiment of the present invention.

(53) As depicted in FIG. 8a, the adhesive transfer method utilizes a transfer surface 30 which includes a backing layer 31 and an activatable adhesive layer 32. In procedures which utilize laser activation of the adhesive layer, the backing layer 31 is preferably transparent, e.g. made of a transparent polymer, glass, or similar material. The activatable adhesive layer 32 can be an emulsion layer, a coated film, or a separate impregnated web fixed to the backing layer. Examples of materials from which the adhesive layer 32 can be made include thermal sensitive adhesives and waxes (e.g., #HAL-2 180C from Precision Coatings), hot glues and sealants (available from Bay Fastening Systems, Brooklyn, N.Y.), ultraviolet sensitive or curing optical adhesives (e.g., N060-N0A81, ThorLabs Inc.), and thermal or optical emulsions (e.g., silkscreen coated emulsion B6 Hi Mesh, Riso Kagaku Corp.)

(54) The backing layer 31 provides physical support for the adhesive surface, and thus can be integrated physically into the activatable adhesive surface.

(55) The activatable adhesive layer 32 is characterized by its ability to be stimulated (activated) by electromagnetic radiation so as to become locally adherent to the tissue. For purposes of selectively activating the activatable adhesive layer 32 one or more chemical components can be incorporated into the layer, which chemical components cause selective absorbance of electromagnetic energy.

(56) As depicted in FIG. 8a, the transfer surface 30 is initially positioned over a cellular material sample 33 which can be a microtome section or cell smear which is supported on a support member 34 which can be a microscopic slide. In the case of a tissue microtome, routine procedures can be used to provide paraffin embedded, formalin-fixed tissue samples.

(57) As shown in FIG. 8b, the transfer surface 30 is brought into contact with the cellular material sample 33. It is noted that the activatable adhesive layer 32 preferably has a larger area than the subregion of cellular material sample which is subsequently selected for procurement.

(58) The transfer surface 30 can be fixed to the cellular material sample support 33 by clips, guides, tape, standard adhesives, or similar convenient

Art Unit: 1743

means. The transfer surface 30 can also contain a label region 35 (see phantom lines in FIG. 8b) to write information such as the patient's identification code or a test designation.

(59) After the transfer surface 30 is brought into contact with the cellular material sample 33, the cellular material sample is viewed by standard low or high power microscopy to locate the region of interest "A". This region can range in size to an area smaller than a single cell (less than 10 microns), to a few cells, to a whole field of cells or tissue. When the area of interest "A" is identified, the precise region of the activatable adhesive layer 32 which is immediately above region "A" is activated by a beam of electromagnetic energy 36, e.g. a laser beam, as depicted in FIG. 8c.

(60) Application of the electromagnetic energy 36 causes the region of the activatable adhesive layer 32 which is immediately above region "A" to adhere to region "A". Although FIGS. 8c and 8d depict a single region of interest "A", it is to be understood that multiple, discontinuous regions of interest could be selected and procured by appropriate aiming and application of the electromagnetic energy.

(61) As depicted in FIG. 8d, after one or more regions of interest are identified and the corresponding region(s) of the activatable adhesive layer 32 is activated by a beam of electromagnetic energy 36, the transfer surface 30 is detached from the cellular material sample support 34. As shown, the removed transfer surface 30 carries with it only the precise cellular material from the region of interest "A", which is pulled away from the remaining cellular material sample.

(62) As mentioned above, a single transfer surface can be used to remove a plurality of areas of interest from a single cellular material sample. The transfer surface 30 carrying the procured cellular material can be treated with suitable reagents to analyze the constituents of the transferred material. This can be accomplished by submerging the transfer surface 30, to which the procured cellular material is adhered, in a suitable reagent solution. Alternatively, one or more of the procured cellular material regions can be removed from the transfer surface 30, or portions of the transfer surface 30 to which the procured cellular material are adhered can be punched out of the transfer surface 30 and analyzed separately.

The Examiner believes this is a clear teaching of a selectively activatable adhesive layer used in transferring tissue as shown in the Figures 8A-8D. As such, the Examiner believes this to be a proper reading of the reference as far as the teaching of a selectively activated coating for tissue adhesion is concerned.


Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Donitzky et al. (6,027,493) teach a device for the removal of body tissue with a convex probe tip. Lintilhac et al. (6,277,637) show probe with a convex and used in measuring turgor pressure. Schatz (5,295,982) and Schneider (1,965,861) teach skin treatment devices with convex ends for molding the device to one's skin. Tsuno et al. (4,807,597) teaches a fiber scope with a convex end for guiding light out of the edge of the fiber.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwayne K Handy whose telephone number is (703)-305-0211. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (703)-308-4037. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0661.


Jill Warden
Supervisory Patent Examiner
Technology Center 1700

Dkh
August 25, 2003